

FEB 12 2007

Serial No. 10/643,660
60246-229

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant: Otter
Serial No.: 10/643,660
Filed: August 19, 2003
Group Art Unit: 3743
Examiner: Duong, Tho V.
Title: COATED CONDENSING HEAT EXCHANGER

Mail Stop Appeal Brief- Patents
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

APPEAL BRIEF

Dear Sir:

Subsequent to the filing of the Notice of Appeal on December 13, 2006, Appellant hereby submits its brief. The Commissioner is authorized to charge Deposit Account No. 03-0835 in the name of Carrier Corporation \$500.00 for the Appeal Brief fee. Any additional fees or credits may be charged or applied to Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds, P.C.

REAL PARTY IN INTEREST

The real party in interest is Carrier Corporation, the assignee of the entire right and interest in this Application. Carrier Corporation is a business unit of United Technologies Corporation.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

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FEB 12 2007

Serial No. 10/643,660
60246-229**STATUS OF CLAIMS**

Claims 29-43 are pending in this application. Claim 29-43 stands finally rejected under 103(a). Claims 1-28 have been cancelled.

STATUS OF AMENDMENTS

All amendments have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

As shown in Figure 3, this invention relates to a heat exchanger component 14 including a plurality of metal condensing flow passages 18 each having a surface (page 4, lines 3 to 4). The heat exchanger component 14 also includes a film 22 formed from a melted polyester applied directly to the surface of the plurality of metal condensing flow passages 18 (page 4, lines 19 to 28 and page 5, lines 1 to 10). This basic structure is set forth in independent claim 27.

Independent claim 36 recites a heat exchanger component 14 including a plurality of metal condensing flow passages 18 each having a surface (page 4, lines 3 to 4). The heat exchanger component 14 also includes a film 22 formed from a melted polymer applied directly to the surface of the plurality of metal condensing flow passages 18 (page 4, lines 19 to 28). The melted polymer is one of polyetherimide, polyethersulfone, polysulfone and polyimide (page 5, lines 1 to 10).

GROUND S OF REJECTION TO BE REVIEWED ON APPEAL

- A. Are Claims 27-43 properly rejected under 35 U.S.C. 103(a) based on *Boah* (US 4,953,511) in view of *R.L. Keneipp Jr.* (US 3,307,996)?

ARGUMENTS

**A. Obviousness of Claims 27-43 based on *Boah* in view of *R.L. Keneipp Jr.*
Claims 27, 28 and 31-35**

The Examiner finally rejected Claims 27, 28 and 31-35 as being obvious over *Boah* in view of *R.L. Keneipp Jr.* The Examiner admits that *Boah* does not disclose a film made of polyester,

Serial No. 10/643,660
60246-229

polyetherimide, polyethersulfone, polysulfone or polyimide. That Examiner states that *R.L. Keneipp Jr.* discloses employing polyethylene, polypropylene or polyester as an anti-corrosive coating material for a steel conduit subjected to a corrosive environment to prevent the steel conduit from corrosion due to a corrosive aqueous fluid, and therefore the claimed invention is obvious. Appellant respectfully disagrees.

The present invention is patentable and strikingly different from *Boah* in view of *R.L. Keneipp Jr.* As described by the claims, the present invention provides a heat exchanger comprising a plurality of metal condensing flow passages each having a surface and a film formed from a melted polyester applied directly to the surface of the plurality of metal condensing flow passages [See Claim 27]. Claims 27-43 of the present invention all share these same or similar features. [See Claims 27-43].

The claimed invention is not obvious. First, *R.L. Keneipp Jr.* is not analogous art to *Boah* or to Appellant's invention. "In order to rely on a reference a basis for rejection of an Appellant's invention, the reference must either be in the field of Appellant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992).

On page 2 of the Final Office Action, the Examiner admits that *R.L. Keneipp Jr.* is not the same field of endeavor as *Boah*. *R.L. Keneipp Jr.* is also not reasonably pertinent to the particular problem that the Appellant has solved. The Examiner states that *R.L. Keneipp Jr.* and *Boah* are analogous art because both deal with a corrosion problem with a corrosive fluid and it would be obvious to use *R.L. Keneipp Jr.*'s teaching in *Boah*.

A reference is reasonably pertinent if, even though it may be in a different field of endeavor, it logically would have commended itself to an inventor's attention in considering his problem because of the matter with which it deals. In re Clay, 966 F. 2d 656, 659, 23 USPQ2d 1058, 1061 (Fed. Cir. 1992). The Examiner states that the heat exchanger of *Boah* and *R.L. Keneipp Jr.* are analogous art in that they both have to deal with corrosion problems. However, *R.L. Keneipp Jr.* is clearly not within the field of heat exchangers and therefore would not logically commend itself to

Serial No. 10/643,660
60246-229

the attention of an inventor seeking to solve problems present in heat exchangers. *R.L. Keneipp Jr.* deals with the problem of preventing corrosion in an oil pipeline that transports oil, which is far removed from Appellant's problem relating to exchanging heat. One seeking to solve problems in heat exchangers would look to references that solves problems in exchanging heat, not in preventing corrosion.

Second, there is no disclosure, suggestion or teaching in either reference in using a melted polymer to form a film as claimed. The Examiner states that these are product by process claims that are limited by the product itself. The Examiner continues that the heat exchanger as claimed is the same as or obvious from the heat exchanger of *Boah*. Appellant respectfully disagrees. The claimed invention requires a melted polymer that forms a film on a heat exchanger. *Boah* does not disclose, suggest or teach that the polypropylene layer is applied to the blank 61 as a melted polymer. The claims recite a material applied in a first state (a melted state) that form a second state (a film). These are structural differences. *R.L. Keneipp Jr.* also does not disclose a film formed from a melted polymer applied directly to the pipeline 2. *R.L. Keneipp Jr.* discloses a tubular liner 18 that is forced into a pipeline 2 to line the pipeline 2. The tubular liner 18 is therefore solid and cannot be applied to the pipeline 2 as a melted polymer.

Finally, the Examiner states on page 3 of the Final Office Action that original claim 16 listed the materials as a Markush group, and therefore it appears that the effect of the heat exchanger surface is equally achieved by the use of any material in the Markush group. However, the fact that materials belong to a class does not mean that the materials are obvious equivalents of each other. For example, in the Background of the Invention section, Appellant stated in paragraph 4 that polypropylene has several drawbacks, and the film of the present invention overcomes these drawbacks. The Examiner questions the relevance of this argument. However, paragraph 4 shows that the materials are not an obvious equivalent of each other. The claimed invention is not obvious, and Appellant respectfully requests that the rejection be reversed.

Serial No. 10/643,660
60246-229

Claim 29

The Examiner finally rejected Claim 29 as being obvious over *Boah* in view of *R.L. Keneipp Jr.* The rejection of claim 29 is separately contested from the rejection of claims 27, 28 and 31-35. Claim 29 recites that a heat exchanger heater heats the metal condensing flow passages when the melted polyester is applied directly to the surface of the metal condensing flow passages. Neither reference discloses, suggests or teaches this feature. *Boah* is silent on how the laminate is applied to the heat exchanger. *R.L. Keneipp Jr.* also does not disclose, suggest or teach a heat exchanger heater that heats a surface of metal condensing flow passages when melted polymer is applied to the surface. *R.L. Keneipp Jr.* discloses that a tubular liner 16 is inside of a pipeline 2. A liquid is forced into the system to cause the tubular liner 16 to turn inside out to line the pipeline 2 (column 3, lines 18 to 26). No heater is employed or even needed to heat the surfaces of the pipeline 2 because the tubular line 16 is basically wrapped around the inner surface of the pipeline 2 and secured at its ends. Therefore, the references taken together do not disclose, suggest or teach the claimed invention. The claimed invention is not obvious, and Appellant respectfully requests that the rejection be reversed.

Claim 30

The Examiner finally rejected Claim 30 as being obvious over *Boah* in view of *R.L. Keneipp Jr.* The rejection of claim 30 is separately contested from the rejection of claims 27, 28 and 31-35. Claim 30 recites that a roller assembly adheres a film to a surface of a plurality of metal condensing flow passages. Neither reference discloses, suggests or teaches this feature. *Boah* is silent on how the laminate is applied to the heat exchanger. *R.L. Keneipp Jr.* is also does not disclose, suggest or teach a roller that adheres a film to a surface of a plurality of metal condensing flow passages. *R.L. Keneipp Jr.* discloses that a tubular liner 16 is located inside of a pipeline 2. A liquid is forced into the system to cause the tubular line 16 to turn inside out to line the pipeline 2 (column 3, lines 18 to 26). No roller is employed. Additionally, a roller cannot be employed as the tubular liner 16 is located *inside* the pipeline 2. A roller would not be able to adhere the tubular liner 16 inside the

Serial No. 10/643,660
60246-229

pipeline 2. Therefore, the references taken together do not disclose, suggest or teach the claimed invention. The claimed invention is not obvious, and Appellant respectfully requests that the rejection be reversed.

Claims 36 and 39-43

The Examiner finally rejected Claims 36 and 39-42 as being obvious over *Boah* in view of *R.L. Keneipp Jr.* The Examiner admits that *Boah* does not disclose a film made of polyester, polyetherimide, polyethersulfone, polysulfone or polyimide. That Examiner states that *R.L. Keneipp Jr.* discloses employing polyethylene, polypropylene or polyester as an anti-corrosive coating material for a steel conduit subjected to a corrosive environment to prevent the steel conduit from corrosion due to a corrosive aqueous fluid, and therefore the claimed invention is obvious. Appellant respectfully disagrees.

The present invention is patentable and strikingly different from *Boah* in view of *R.L. Keneipp Jr.* As described by the claims, the present invention provides a heat exchanger comprising a plurality of metal condensing flow passages each having a surface and a film formed from a melted polyester applied directly to the surface of the plurality of metal condensing flow passages [See Claim 27]. Claims 27-43 of the present invention all share these same or similar features. [See Claims 27-43].

The claimed invention is not obvious. First, *R.L. Keneipp Jr.* is not analogous art to *Boah* or to Appellant's invention. "In order to rely on a reference a basis for rejection of an Appellant's invention, the reference must either be in the field of Appellant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). On page 2 of the Final Office Action, the Examiner admits that Keneipp is not the same field of endeavor as *Boah*.

R.L. Keneipp Jr. is also not reasonably pertinent to the particular problem that the Appellant has solved. The Examiner states that *R.L. Keneipp Jr.* and *Boah* are analogous art because both deal

Serial No. 10/643,660
60246-229

with a corrosion problem with a corrosive fluid and it would be obvious to use *R.L. Keneipp Jr.*'s teaching in *Boah*.

A reference is reasonably pertinent if, even though it may be in a different field of endeavor, it logically would have commended itself to an inventor's attention in considering his problem because of the matter with which it deals. In re Clay, 966 F. 2d 656, 659, 23 USPO2d 1058, 1061 (Fed. Cir. 1992). The Examiner states that the heat exchanger of *Boah* and *R.L. Keneipp Jr.* are analogous art in that they both have to deal with corrosion problems. However, *R.L. Keneipp Jr.* is clearly not within the field of heat exchangers and therefore would not logically commend itself to the attention of an inventor seeking to solve problems present in heat exchangers. *R.L. Keneipp Jr.* deals with the problem of preventing corrosion in an oil pipeline that transports oil, which is far removed from Appellant's problem relating to exchanging heat. One seeking to solve problems in heat exchangers would look to references that solves problems in exchanging heat, not preventing corrosion.

Second, there is no disclosure, suggestion or teaching in either reference in using a melted polymer to form a film as claimed. The Examiner states that these are product by process claims that are limited by the product itself. The Examiner continues that the heat exchanger as claimed is the same as or obvious from the heat exchanger of *Boah*. Appellant respectfully disagrees. The claimed invention requires a melted polymer that forms a film on a heat exchanger. *Boah* does not disclose, suggest or teach that the polypropylene layer is applied to the blank 61 as a melted polymer. The claims recite a material applied in a first state (a melted state) that form a second state (a film). These are structural differences. *R.L. Keneipp Jr.* also does not disclose a film formed from a melted polymer applied directly to the pipeline 2. *R.L. Keneipp Jr.* discloses a tubular liner 18 that is forced into a pipeline 2 to line the pipeline 2. The tubular liner 18 is therefore solid and cannot be applied to the pipeline 2 as a melted polymer. The claimed invention is not obvious, and Appellant respectfully requests that the rejection be reversed.

Finally, the Examiner states on page 3 of the Final Office Action that original claim 16 listed the materials as a Markush group, and therefore it appears that the effect of the heat exchanger

Serial No. 10/643,660
60246-229

surface is equally achieved by the use of any material in the Markush group. However, the fact that materials belong to a class does not mean that the materials are obvious equivalents of each other. For example, in the Background of the Invention section, Appellant stated in paragraph 4 that polypropylene has several drawbacks, and the film of the present invention overcomes these drawbacks. The Examiner questions the relevance of this argument. However, paragraph 4 shows that the materials are not an obvious equivalent of each other. The claimed invention is not obvious, and Appellant respectfully requests that the rejection be reversed.

The claimed invention is also not obvious because neither reference discloses, suggests or teaches a heat exchanger component including a film formed from a melted polymer that is one of polyetherimide, polyethersulfone, polysulfone and polyimide. Neither *Boah* nor *R.L. Keneipp Jr.* teaches employing polyetherimide, polyethersulfone, polysulfone and polyimide, and therefore the references together do not disclose, suggest or teach employing polyetherimide, polyethersulfone, polysulfone or polyimide as a film on a metal surface as claimed. *Boah* only teaches employing polyethylene, polypropylene or polyester as a corrosion-resistant material. *R.L. Keneipp Jr.* only discloses the use of polyethylene, polypropylene, unsaturated polyester, Teflon, Saran and the like. Neither reference discloses a melted polymer that is one of polyetherimide, polyethersulfone, polysulfone and polyimide. Therefore, the combination of the references cannot disclose, suggest or teach the claimed invention.

Claim 37

The Examiner finally rejected Claim 37 as being obvious over *Boah* in view of *R.L. Keneipp Jr.* The rejection of claim 37 is separately contested from the rejection of claims 36 and 39-42. Claim 29 recites that a heat exchanger heater heats the metal condensing flow passages when the melted polyester is applied directly to the surface of the metal condensing flow passages. Neither reference discloses, suggests or teaches this feature. *Boah* is silent on how the laminate is applied to the heat exchanger. *R.L. Keneipp Jr.* also does not disclose, suggest or teach a heat exchanger heater that heats a surface of metal condensing flow passages when melted polymer is applied to the

Serial No. 10/643,660
60246-229

surface. *R.L. Keneipp Jr.* discloses that a tubular liner 16 is located inside of a pipeline 2. A liquid is forced into the system to cause the tubular liner 16 to turn inside out to line the pipeline 2 (column 3, lines 18 to 26). No heater is employed or even needed to heat the surfaces of the pipeline 2 because the tubular line 16 is basically wrapped around the inner surface of the pipeline 2 and secured at its ends. Therefore, the references taken together do not disclose, suggest or teach the claimed invention. The claimed invention is not obvious, and Appellant respectfully requests that the rejection be reversed.

Claim 38

The Examiner finally rejected Claim 38 as being obvious over *Boah* in view of *R.L. Keneipp Jr.* The rejection of claim 38 is separately contested from the rejection of claims 36 and 39-42. Claim 30 recites that a roller assembly adheres a film to a surface of a plurality of metal condensing flow passages. Neither reference discloses, suggests or teaches this feature. *Boah* is silent on how the laminate is applied to the heat exchanger. *R.L. Keneipp Jr.* is also does not disclose, suggest or teach a roller that adheres a film to a surface of a plurality of metal condensing flow passages. *R.L. Keneipp Jr.* discloses that a tubular liner 16 is located inside of a pipeline 2. A liquid is forced into the system to cause the tubular line 16 to turn inside out to line the pipeline 2 (column 3, lines 18 to 26). No roller is employed. Additionally, a roller cannot be employed as the tubular liner 16 is located *inside* the pipeline 2. A roller would not be able to adhere the tubular liner 16 inside the pipeline 2. Therefore, the references taken together do not disclose, suggest or teach the claimed invention. The claimed invention is not obvious, and Appellant respectfully requests that the rejection be reversed.

FEB 12 2007

Serial No. 10/643,660
60246-229

CONCLUSION

For the reasons set forth above, the rejection of all claims is improper and should be reversed.
Appellant respectfully requests such an action.

Respectfully Submitted,

CARLSON, GASKEY & OLDS, P.C.

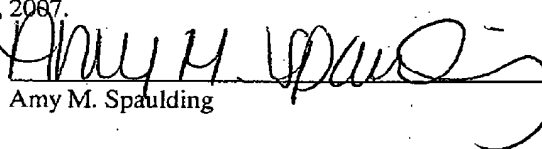


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Dated: February 12, 2007

CERTIFICATE OF FACSIMILE

I hereby certify that this appeal brief is being facsimile transmitted to the United States Patent and Trademark Office, 571-273-8300 on February 12, 2007.



Amy M. Spaulding

FEB 12 2007

Serial No. 10/643,660
60246-229

CLAIM APPENDIX

27. A heat exchanger component comprising:
a plurality of metal condensing flow passages each having a surface; and
a film formed from a melted polyester applied directly to the surface of the plurality of metal condensing flow passages.
28. The heat exchanger component as recited in claim 27 wherein the melted polyester is one of polybutylene terephthalate and polyethylene terephthalate.
29. The heat exchanger component as recited in claim 27 wherein the surface of the plurality of metal condensing flow passages are heated by a heat exchanger heater when the melted polyester is applied directly to the surface.
30. The heat exchanger component as recited in claim 27 wherein a roller assembly adheres the film to the surface of the plurality of metal condensing flow passages.
31. The heat exchanger component as recited in claim 27 wherein a plurality of polyester pellets are melted by a polymer heater to form the melted polyester.
32. The heat exchanger component as recited in claim 27 wherein the surface of the plurality of metal condensing flow passages is substantially flat.
33. The heat exchanger component as recited in claim 27 wherein the film has a thickness between approximately 0.2 and 10 mils.
34. The heat exchanger component as recited in claim 27 wherein the heat exchanger component is a condensing heat exchanger.

Serial No. 10/643,660
60246-229

35. The heat exchanger component as recited in claim 27 wherein the heat exchanger component exchanges heat between a flue gas and air.
36. A heat exchanger component comprising:
a plurality of metal condensing flow passages having a surface; and
a film formed from a melted polymer applied directly to the surface of the plurality of metal condensing flow passages, wherein the melted polymer is one of polyetherimide, polyethersulfone, polysulfone and polyimide.
37. The heat exchanger component as recited in claim 36 wherein the surface of the plurality of metal condensing flow passages are heated by a heat exchanger heater when the melted polymer is applied directly to the surface.
38. The heat exchanger component as recited in claim 36 wherein a roller assembly adheres the film to the surface of the plurality of metal condensing flow passages.
39. The heat exchanger component as recited in claim 36 wherein a plurality of polymer pellets are melted by a polymer heater to form the melted polymer.
40. The heat exchanger component as recited in claim 36 wherein the surface of the plurality of metal condensing flow passages is substantially flat.
41. The heat exchanger component as recited in claim 36 wherein the film has a thickness between approximately 0.2 and 10 mils.
42. The heat exchanger component as recited in claim 36 wherein the heat exchanger component is a condensing heat exchanger.

Serial No. 10/643,660
60246-229

43. The heat exchanger component as recited in claim 36 wherein the heat exchanger component exchanges heat between a flue gas and air.

Serial No. 10/643,660
60246-229

EVIDENCE APPENDIX

None

Serial No. 10/643,660
60246-229

RELATED PROCEEDINGS APPENDIX

None

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